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4 January 1983

CHINA REPORT SCIENCE AND TECHNOLOGY

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APPLIED SCIENCES

BRIEFS

ACCURATE STANDARDS OF LENGTH--Beijing, 8 Nov (XINHUA)--China's standard meter and the standard meter in terms of laser wavelength now rank among the most accurate in the world, the State Administration of Standards announced here today. According to data published by the International Advisory Committee on the definition of the meter, comparisons during the past few years show China's standard meter is accurate to 0.02 microns of the international prototype meter kept in Paris, ranking best among Australia, Canada, Britain, Japan, the United States, the Democratic Republic of Germany, the Soviet Union, and Italy, and other countries that took part in the international comparisons. The laser wavelength China uses to reproduce standards of length is also among the most accurate of these countries, the administration said. The wavelength is derived from the constant frequency laser of methane gas. Based on this wavelength, which is far more accurate than the isotope laser wavelength, China has established a length measuring system widely applied in production, scientific research and national defense. [Text] [Beijing XINHUA in English 0806 GMT 8 Nov 82]

CSO: 4010/23

Construction Machinery

AUTHOR: LIU Limin [0491 4409 3046]

ORG: Tianjin Research Institute of Construction Machinery

TITLE: "Condition of Experiments in Construction Machinery Under the Plateau Low Temperature Condition in China and Several Suggestions"

SOURCE: Tianjin GONGCHENG JIXIE [CONSTRUCTION MACHINERY AND EQUIPMENT] in Chinese No 11, Nov 82 pp 2-8

ABSTRACT: In China, research on the manufacture of plateau low temperature type construction machinery began in the middle of the 60's to meet the requirements of Qinghai-Xizang Plateau where the elevation is high, the air thin, the temperature low, the solar radiation intense, the wind and sand storms great, the weather arid and there are large areas of permafrost zones. Based upon experimental reports of related systems of the Ministry of Machine Industry on such construction machines as trucks and their components, made by these systems to operate under such an adverse environment, the paper introduces briefly the power recovery and adaptability of several diesel engines, the weather protective property of the driver's cab, the low temperature resistance of rubber parts, the low temperature lubricants, and the low temperature adaptability of the entire truck. The work of research on plateau low temperature machines has barely begun. The author suggests that in the future there should be work on classification of plateaus and low temperature conditions, on the key technical problems of the engine and its clutch, the hydraulic transmission system, low temperature brittleness resistant metals, such work processes as

[continuation of GONGCHENG JIXIE No 11, 1982 pp 2-8]

heat treatment, casting, and welding, low temperature resistant rubber and lubricants, etc. Furthermore, the author believes that China should prepare to develop techniques and machinery for excavating frozen earth and to establish low temperature and low pressure laboratories.

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CSO: 4009/45

Conveyors

AUTHOR: SU Enyi [5685 1869 0001]

ORG: None

TITLE: "Brief News of the Symposium on Export and Industrial Technology of Light and Small Conveyors"

SOURCE: Beijing QIZHONG YUNSHU JIXIE [HOISTS AND CONVEYANCES] in Chinese No 10, 6 Oct 82 p 60

ABSTRACT: On 10-14 Jun 82, a Symposium on Export and Industrial Technology of Light and Small Conveyors was called in Wuxi, Jiangsu Province under the auspices of the Bureau of Heavy Mining Machinery of the Ministry of Machine Industry. Participants included 40 delegates representing 6 major light small conveyors manufacturing plants and 16 other research institutes and related provincial and municipal bureaus of machines. The Research Institute of Hoists and Conveyances was asked to report on the current domestic condition of production of such machines, their export requirements, and types and quality improvements needed to expand their export trade. This report was followed by analyses of some problems of quality, including the poor abrasion resistance of the wheels, the small capacity of the batteries, the short useful life, the unsatisfactory DC motor, oil leakage of the hydraulic system, the unreasonable design of the section of the frame, etc. The Bureau of Heavy Mining Machinery required these problems to be resolved during the year of 1982-83 and gave the Research Institute of Hoists and Conveyances the responsibility of formulating breakthrough plans and supervising the work and inspecting the results of resolving these problems.

6248

CSO: 4009/41

Diesel Technology

AUTHOR: None

ORG: Standardization Office, Dalian Research Institute of Diesel Locomotives

TITLE: "Conference of Examination of Standards for Diesel Locomotives Held in Dalian"

SOURCE: Dalian NEIRAN JICHE [DIESEL LOCOMOTIVE] in Chinese No 9, 15 Sep 82 p 22

ABSTRACT: The Conference of Examination of Standards for Diesel Locomotives, jointly sponsored by the Bureau of Science and Technology and the Bureau of Industry of Ministry of Railways was held in Dalian Locomotive and Car Plant, on 10-16 Aug. Participants included 71 delegates representing 31 related bureaus, plants, academies, and institutes; 6 specialists and professors of the field of diesel locomotives were also invited to attend. Detailed discussions were carried out concerning the adoption of equivalent standards of the UIC in their entirety. This was the first time the Ministry of Railways stated its plan of directly adopting the international standards. All present agreed that conditions must be urgently created for the adoption of the UIC standards. The delegates carefully checked, word for word and sentence for sentence, the UIC document translated into Chinese from the German, French, and English originals. The contents were analyzed and discussed in an effort to understand the original meanings fully. The 2 important Ministerial standards on the technical condition of the gudgeon [piston] pin of the diesel engine of the internal combustion locomotive (including the metallic phase spectrum) and the general technical condition of the governor system of the diesel engine were also examined and passed at the conference.

AUTHOR: GUO Yunlin [6751 5366 5376]

ORG: Dalian Research Institute of Diesel Locomotives

TITLE: "Experience Exchange Conference of Applications of Electronic Computer in the Designing Research on Locomotives Held in Dalian"

SOURCE: Dalian NEIRAN JICHE [DIESEL LOCOMOTIVE] in Chinese No 9, 15 Sep 82 pp 61, 60

ABSTRACT: The Bureau of Industry of Ministry of Railways called the Experience Exchange Conference of Applications of Electronic Computer in the Designing Research on Locomotives on 13-20 Aug 82 in Dalian, to be jointly sponsored by the Dalian Research Institute of Diesel Locomotives and Dalian Locomotive and Car Plant. Participants included 45 delegates representing 11 bureaus and plants. The conference received 45 papers. Dalian College of Engineering Prof ZHONG Wanxie [6945 8001 0533] reported on the development and current condition of software applications and YANG Mingsheng [2799 2494 3932] introduced the DDJT graphic program. A class for learning the DDJT Program was launched on 18-20. These activities and some suggestions presented at the conference are briefly reported.

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CSO: 4009/34

Earthquake Engineering

AUTHOR: None

ORG: None

TITLE: "Symposium on the Special Subject of 'Earthquake Resistant Property of Multi-storied Brick Masonry Structure and Its Safety Evaluation' "Held in Hangzhou"

SOURCE: Harbin DIZHEN GONGCHENG YU GONGCHENG ZHENDONG [EARTHQUAKE ENGINEERING AND ENGINEERING VIBRATION] in Chinese Vol 2 No 3, Sep 82 p 106

ABSTRACT: The Research Institute of Engineering Mechanics Chinese Academy of Sciences, entrusted by the Earthquake Resistance Office of the National Construction Committee, held the Symposium in Hangzhou on 27 Mar to 2 Apr 82. Participants included 49 delegates representing 26 departments of scientific research, schools of higher education, and earthquake resistance administration. The symposium received 43 papers, covering (1) Basic research on earthquake resistance property of brick and masonry structures; (2) Earthquake resistance evaluation of multi-storied brick buildings and research on the method of forecasting earthquake damage; (3) Evaluation of earthquake resistance of multi-storied brick buildings and the application of the method of forecasting earthquake damage; (4) others. Brick structure remains the current and future major form of structures in China. The experience of damages during several earthquakes in the past has attracted a great deal of attention to the study of its earthquake resistance property. The method of forecasting earthquake damage to multi-storied brick buildings was extensively discussed at the symposium. Through extensive statistical analysis of earthquake damages and combined

[continuation of DIZHEN GONGCHENG YU GONGCHENG ZHENDONG Vol 2 No 3, 82 p 106]

with the existing regulations on earthquake resistance designing, the method is based upon the building as an entity, yet using the earthquake resistance of the walls as the major criterion. At the same time, effects of the conditions of the site, the favorable and unfavorable factors of the various parts of a structure are also taken into consideration. This method was used by the Research Institute of Engineering Mechanics and Henan Provincial Office of Earthquake Resistance to make damage forecasts in Anyang and N. Henan and by the Liaoning Research Institute of Construction for 3 cities of S. Liaoning. The delegates offered many valuable suggestions with respect to perfecting and applying this method. A symposium on the special subject of problems of the inner framework structure was proposed for the future.

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CSO: 4009/43

Mining Machinery

AUTHOR: FENG Qichao [7458 6386 6389]

ORG: None

TITLE: "Standardization Work Conference of the Mining Machinery Industry Held in Datong"

SOURCE: Luoyang KUANGSHAN JIXIE [MINING MACHINERY] in Chinese No 10, Oct 82 p 64

ABSTRACT: The adoption of the international standard is an important decision of strategic significance for promoting the machine industries. In order to implement the spirit of this decision of the Ministry, the Bureau of Heavy Mining Machinery of the Ministry called the work conference in the middle of Aug 82. Following discussions on the necessity and importance of adopting the international standard, the formula of standardization work in 83-85 and the standardization work plan for 83 are preliminarily proposed. The form, timing, and place of the items to be revised were determined to finalize the standardization work arrangement for the future. During the conference, the Luoyang Mining Machinery Center and the Shenyang Mining Machinery Center introduced the conditions of comparison between the Chinese and foreign standards of pit hoist machines, crushers, windlasses, and ore dressing machines. The conference proposed: (1) The industry must be determined to adopt the international standard; (2) If any current standard indices in China are higher than the international indices, they should not be reduced unless they are truly unreasonable; (3) Comprehensive technical properties must be adopted in their entirety in the standard; (4) Standards must be nationally uniform; (5) As much as possible all equivalent standards should be revised into national standards.

AUTHOR: None

ORG: Editorial Department of HUAGONG KUANGSHAN JISHU

TITLE: "1983 Subscription to HUAGONG KUANGSHAN JISHU Invited"

SOURCE: Luoyang KUANGSHAN JIXIE [MINING MACHINERY] in Chinese No 10, Oct 82 p 64

ABSTRACT: HUAGONG KUANGSHAN JISHU is a journal of mining technology of a nationwide characteristic, just been approved for publication by the Ministry of Chemical Engineering Industry, mainly for reporting research results and experience in mining chemical engineering, announcing national goals and technical policies of mining development, introducing new domestic and foreign achievements and advancements in mining work processes, equipment, theories, etc. The contents of specialization will include mining geology and surveying, pit and tunnel construction, open and underground mining, mining machinery and electricity, ore dressing processes and agents, technical economics and enterprise management, comprehensive utilization ore chemistry, mining safety, environmental protection, etc. The journal will be available for subscription at the post offices everywhere in the country. Readers may also remit money directly to the Ministry of Chemical Industry for its subscription.

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CSO: 4009/44

Metrology

AUTHOR: None

ORG: None

TITLE: "Meeting for Establishing the Thermal Material Metrology Specialty Committee and Its First Scientific Symposium Held in Chengdu"

SOURCE: Beijing JILIANG XUEBAO [ACTA METROLOGICA SINICA] in Chinese No 4, 22 Oct 82 p 329

ABSTRACT: For the purpose of raising the level of testing hot materials and media, the Chinese Metrology Society Thermal Material Specialty Committee was established in Chengdu City on 24 May 82. The meeting was attended by 98 delegates representing 62 organizations. The application of thermal materials in the national economy, its relationship with other sciences, and its problems urgently requiring solutions were discussed and many valuable suggestions proposed. During the scientific symposium held at the same time, the 63 submitted papers and technical reports were discussed. They involved metallic, inorganic nonmetallic, organic high molecular materials and food grains. The physical properties for testing included heat conductivity, temperature conductivity, specific heat, emission rate, expansion coefficient, and such related parameters as resistance, density, modulus of elasticity, etc. Scientific democracy prevailed and discussions proceeded very lively to forebode a prosperous future for this field in China.

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CSO: 4009/42

Underground Engineering

AUTHOR: RONG Chuan [1369 1557]

ORG: None

TITLE: "First Conference of the Tunnel and Underground Engineering Branch of the Volume on Civil Engineering· Chinese Encyclopedia"

SOURCE: Chongqing DIXIA GONGCHENG [UNDERGROUND ENGINEERING] in Chinese No 9, 11 Sep 82 pp 45, backcover

ABSTRACT: The first conference of the Tunnel and Underground Engineering Branch of the Volume of Civil Engineering·Chinese Encyclopedia, held in Wuxi City on 10-17 Apr 82 was organized by the Science and Technology Department of the Encyclopedia Publications, the Railway Engineering Department of Southwest Jiaotong University, and the Underground Engineering Department of Tongji University and attended by 15 delegates representing 9 organizations. Prof ZHANG Qingwen [1728 1987 2429] chief editor of the Volume on Civil Engineering of the Encyclopedia delivered a detailed introduction of the meaning, goal, characteristics, and editorial policy and style of the Encyclopedia. Assistant Prof PAN Changqian [3382 2490 0051] of Tongji University and Assistant Prof FAN Wentian [5400 2429 3944] of Southwest Jiaotong University explained the draft headings of the branch under discussion and the revisions proposed by the various organizations. On these bases, the delegates carried out a spirited discussion on the headings of this branch and agreed on a preliminary framework of headings of this branch, their contents, and the number of words involved.

[continuation of DIXIA GONGCHENG No 9, 1982 pp 45, backcover]

The list of persons to be invited to write the articles were recommended. The first edition of Chinese Encyclopedia is to be published in separate volumes to number a total of about 70 volumes. In the volume on Civil Engineering, there will be 17 branches. Following negotiations, it was finally resolved that the Tunnel and Underground Engineering Branch will be divided into tunnels and underground engineering, tunnels, railway tunnels, highway tunnels, navigation tunnels, hydrological engineering caverns, under water tunnels, Huangpujiang Tunnel, Municipal Tunnels, underground railways, Beijing Subway, underground engineering, civil defense engineering, International Tunnel Association, Chinese Civil Engineering Society Tunnel Society, tunnel and underground engineering support structures, classification of surrounding rocks, etc. totaling 53 items in about 100,000 words [characters.] The preliminary writing and editing work is to be finished by the end of this year to proceed with revision, etc. in 1983.

AUTHOR: XU Shuigen [1776 3055 2704]

ORG: None

TITLE: "Treatment of Water Leakage in Underground Buildings"

SOURCE: Chongqing DIXIA GONGCHENG [UNDERGROUND ENGINEERING] in Chinese No 10,
11 Oct 82 pp 32-35

ABSTRACT: The designing of ventilation and dehumidification of underground buildings concerns normally only the moisture dispersed from the building walls and the humidity brought in by persons and air. But, if serious water leakage is present, the moisture dispersion may double. The larger is the area of leakage, the greater is the moisture dispersed within the building. Water leakage of underground building is usually caused by expansion and contraction seams, construction seams, and fractures of the concrete, and defects of the cement. Methods and available materials for treating these 4 situations of water leakage in an underground building are explained separately in the paper, including the technique of mixing water repellent materials such as epoxy resin, polyamide plastics, tar, etc.

AUTHOR: YUAN Guosheng [5913 0948 0524]
LU Weicheng [7120 0251 2052]

ORG: None

TITLE: "Example of Large Span Tunneling Method in Loose Geological Conditions"

SOURCE: Chongqing DIXIA GONGCHENG [UNDERGROUND ENGINEERING] in Chinese No 10,
11 Oct 82 pp 37-41

ABSTRACT: A certain underground structure is composed of a passageway, the main caverns, and corridors linking the caverns. A main cavern has a net span of 24.1 m and a net height of 21.5m. The structure is in a region of sedimentary and metamorphic rocks, with relatively complex geological conditions. A regional fault passes the entrance and the tail end of the structure. In the middle, there is a soft and weak stratum of phyllites, intersecting the axis line of the cavern at 70-85°. The structure was completed in 1972. The phyllite section was provided with temporary support of a wood framework for the arch. By the end of 1974, peeling type defects occurred. Excavation disclosed cave-in at a height of 26 m. Of the 3 possible methods of (1) Enlarging the base of the arch; (2) Installing anchor holes; (3) Installing beams in the corners of the arch, the 3rd method was adopted to resolve the problem of stability of the arch and to reduce the danger of uneven settling of the walls to the arch. This and other secondary measures adopted to repair the structure are explained in considerable detail.

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CSO: 4009/38

END